

# **EXHIBIT 52**

**State of Nevada  
Department of Motor Vehicles  
Occupational and Business Licensing Section**

NEVADA ATCF LLC  
7900 W SUNSET RD  
LAS VEGAS NV 89113-2188

License #: ATCF00046219

**EXPIRES  
9/30/2017**

TYPE OF LICENSE : AUTONOMOUS TECHNOLOGY CERTIFICATION FACILITY

**THIS DOCUMENT AUTHORIZES YOU TO ENGAGE IN BUSINESS AS A LICENSEE OF THE  
DEPARTMENT OF MOTOR VEHICLES UNTIL 09-30-2017. THIS LICENSE IS  
NON-TRANSFERABLE.**



# **Autonomous Technology Certification Facility License**

**Nevada Department of Motor Vehicles  
Attention: Director's Office  
555 Wright Way  
Carson City, Nevada 89711**

**For Questions, Please Contact:  
Jude Hurin (775) 684-4562  
April Sanborn (775) 684-4719**

## **INTRODUCTION**

The State of Nevada, Department of Motor Vehicles is continuing their progressive development of the Autonomous Technology program by licensing qualified, competent businesses that certify such technology. Companies interested in certifying vehicles installed with Autonomous Technology may submit application to the Department for an Autonomous Technology Certification Facility License. In an effort to ensure these businesses do not pose unnecessary risk to the Nevada public, the Department will review all Autonomous Technology Certification Facility License applications. Since the security of the public is always the Department's primary concern, applicants must provide sufficient proof that the company possesses the necessary knowledge and expertise to certify the safety of Autonomous Vehicles.

## **CERTIFICATE OF COMPLIANCE**

Upon attaining licensure from the Department, Autonomous Technology Certification Facilities will issue customers a Certificate of Compliance assuring the Autonomous Technology installed has the following capabilities:

- a separate mechanism, in addition to and separate from any other mechanism required by law to capture and store the autonomous technology sensor data for at least thirty (30) seconds before a collision occurs between the autonomous vehicle and another vehicle, object or natural person, while operated in autonomous mode;
- a switch to engage and disengage the autonomous vehicle, which is easily accessible to the operator and is not likely to distract from focusing on the road;
- a visual indicator inside the autonomous vehicle showing when the vehicle is engaged in autonomous mode;
- a system to safely alert the operator if a technology failure is detected while engaged in autonomous mode and will either **a)** require the operator to take control of the vehicle or **b)** be equipped with technology to move out of traffic and come to a stop should the operator be unable or not present to take control of the autonomous vehicle; and ensures
- the technology does not adversely affect any other safety features of the autonomous vehicle, which are subject to federal regulation;
- is able to be operated in compliance with applicable traffic laws of this State and indicates whether it may be operated with or without the physical presence of an operator.
- if it is necessary for the operator to be present while the vehicle is engaged in autonomous mode, the technology must allow the operator to take control of the autonomous vehicle in multiple manners, including, without limitation, through the use of the brake, accelerator pedal, steering wheel and alerts the operator when autonomous mode has been disengaged.

The Certificate of Compliance must also certify that an owner's manual has been provided to the purchaser of the vehicle, which describes any limitations and capabilities of the autonomous vehicle and/or its technology.

The Department recommends use of our Certificate of Compliance template to ensure your company includes all the required information.



Occupational and Business Licensing  
 555 Wright Way  
 Carson City, NV 89711  
 (775) 684-4690  
[www.dmvnm.com](http://www.dmvnm.com)

# APPLICATION FOR AUTONOMOUS TECHNOLOGY CERTIFICATION FACILITY LICENSE

Reason for Submittal: ☒ New Application ☐ Renewal ☐ Change \_\_\_\_\_  
 (Indicate type of change)

State Business License Number NV20161535218 DMV License Number AVT 0000 46219  
 (If new applicant, please leave blank)

Individual/Corporate Name Nevada ATCF LLC

DBA Name N/A

Mailing Address 7900 West Sunset Rd Las Vegas Nevada 89113  
Street City State Zip

Physical Address 7900 West Sunset Rd Las Vegas Nevada 89113  
Street City State Zip

Business Phone Number 303-667-3445 Business Fax Number N/A

E-Mail Address atcf@ot.to FEIN N/A  
 (If Applicable)

☐ Sole Proprietorship ☐ Partnership ☐ LLP ☒ LLC ☐ Corporation: Incorporation State \_\_\_\_\_

List name and title of each individual, each partner, whether general or limited, or each principal officer, director or stockholder participating in the direction, control or management of the policy of the business, if applicable. Use separate page if necessary. Ownership change requires notification to the Department.

Name (LAST, FIRST, MIDDLE)	Title	Telephone Number
Karen Walker	Manager	866-576-1039
Gautam Gupta	Manager	866-576-1039
Ottomotto LLC	Managing Member	N/A

The Corporation Trust Company of Nevada, 701 S. Carson St., Suite 200

Registered Agent: Carson City, NV 89701

List name and title of all personnel authorized by the facility to certify autonomous technology. Use separate page if necessary.

Name (LAST, FIRST, MIDDLE)	Title
Anthony Levandowski	Authorized Representative
Robert Miller	Authorized Representative
Matt Williams	Authorized Representative
Matt Grigsby	Authorized Representative

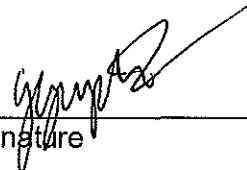
**Note: For a full list of authorized personnel, please see the Appendix.**

As a Nevada Autonomous Technology Certification Facility, I agree to operate my facility in accordance with the requirements set forth in Chapter 482A of the Nevada Revised Statutes and Nevada Administrative Codes. Furthermore, I affirm that my facility possesses the necessary knowledge and expertise to certify the safety of autonomous vehicles, including, without limitation, whether the autonomous vehicles meet the requirements noted in Chapter 482A of the Nevada Revised Statutes and Nevada Administrative Codes.

I hereby authorize the Department of Motor Vehicles to make any background investigation necessary as it pertains to the issuance of my license. I understand that providing false information or the omission of the requested information in this application is grounds to deny, suspend, or revoke my business license and constitutes a gross misdemeanor under Chapter 482A of the Nevada Revised Statutes. I declare under penalty of perjury that the foregoing is true and correct.

**NOTE: TO BE SIGNED BY SOLE OWNER, PARTNER, OR OFFICER OF THE CORPORATION ONLY.**

Signatures must be original. Photocopies are not accepted.

  
Applicant Signature

9/15/2016  
Date

Gautam Gupta, Manager  
Applicant Printed Name and Title (if applicable)

State of \_\_\_\_\_, County of \_\_\_\_\_

Subscribed and sworn before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by \_\_\_\_\_

Notary Public or Authorized Nevada DMV Representative Signature

(Notary seal)

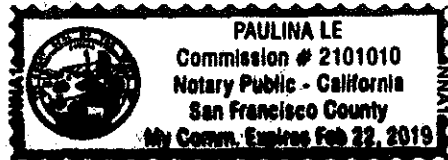
See Attached

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California  
County of San Francisco

Subscribed and sworn to (or affirmed) before me on this 15th  
day of September, 20 16, by Gautam Gupta

proved to me on the basis of satisfactory evidence to be the  
person(s) who appeared before me.



(Seal)

Signature

A handwritten signature in black ink, appearing to be 'Paulina Le', written over a horizontal line.



Occupational and Business Licensing  
555 Wright Way  
Carson City, Nevada 89711-0100  
(775) 684-4690  
[www.dmvnev.com](http://www.dmvnev.com)

### CHILD SUPPORT INFORMATION

Nevada Administrative Code 482A requires the Department to request statements regarding child support from applicants for new and renewal of Autonomous Vehicle licenses.

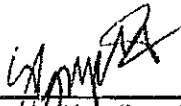
Each license applicant applying for a new or renewal of his or her license must complete and sign the Child Support Information below.

Regulation prohibits the Department from processing your application without submission of the information below. Please mark the appropriate response and complete the remainder of the form. Failure to mark one of the three and completion of the form will result in denial of the application.

- ☒ I am not subject to a court order for the support of a child.
- ☐ I am subject to a court order for the support of one or more children and am in compliance with a plan approved by the district attorney or other public agency enforcing the order for the repayment of the amount owed pursuant to the order; or
- ☐ I am subject to a court order for the support of one or more children and am not in compliance with the order or plan approved by the district attorney or other public agency enforcing the order for the repayment of the amount owed pursuant to the order.

N/A  
Applicant's Social Security No.

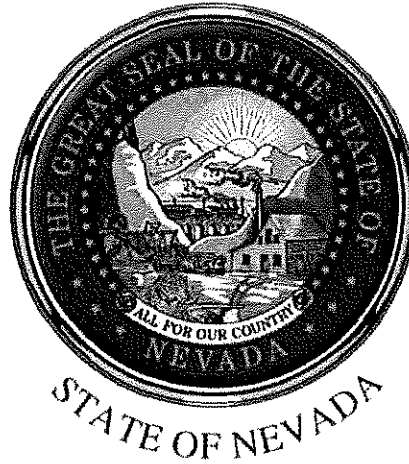
Gautam Gupta  
Applicant's Name (please print)

  
Signature of Applicant

1/20/2016  
Date



# SECRETARY OF STATE



## NEVADA STATE BUSINESS LICENSE

**NEVADA ATCF LLC**

Nevada Business Identification # NV20161535218

**Expiration Date: September 30, 2017**

In accordance with Title 7 of Nevada Revised Statutes, pursuant to proper application duly filed and payment of appropriate prescribed fees, the above named is hereby granted a Nevada State Business License for business activities conducted within the State of Nevada.

Valid until the expiration date listed unless suspended, revoked or cancelled in accordance with the provisions in Nevada Revised Statutes. License is not transferable and is not in lieu of any local business license, permit or registration.



IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Great Seal of State, at my office on September 12, 2016

*Barbara K. Cegavske*

BARBARA K. CEGAVSKE  
Secretary of State

***You may verify this license at [www.nvsos.gov](http://www.nvsos.gov) under the Nevada Business Search.***

License must be cancelled on or before its expiration date if business activity ceases.  
Failure to do so will result in late fees or penalties which by law cannot be waived.

## AUTONOMOUS VEHICLE LICENSE BOND

Bond Number 0688092

License Type:

Premium: \$10,000.00 Annually

☐ Testing Company  
☒ Certification Facility

KNOW ALL MEN BY THESE PRESENTS:

That Nevada ATCF LLC, as principal,  
(Corporate Name and Doing Business As Name)

located in the County of Clark, State of Nevada, obligee, and, International Fidelity Insurance Company  
(Name of Surety)

a corporation organized and existing under and by virtue of the laws of the State of New Jersey, and  
authorized to transact a surety business in the State of Nevada, as surety, are held and firmly bound unto the State of  
Nevada in the penal sum of \$500,000 for the payment of which well and truly to be made we hereby bind  
ourselves, our respective heirs, administrators, executors, successors and assigns jointly and severally, firmly by these  
presents:

To be effective on the 15th day of September, 2016

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, the above-named principal has been licensed to carry on or conduct in this State the business of  
testing and/or certifying Autonomous Vehicles; and

WHEREAS, the above-named surety herein agrees that any person injured by the action or actions of the  
principal and/or his employees involved in any fraud or fraudulent representation or in violation of any of the provisions of  
Chapter 482A of the Nevada Revised Statutes or Nevada Administrative Codes may bring action in said injured person's  
own name against the said surety. This bond is continuous in form and the total aggregate liability of the bond is limited to  
the payment of the total amount of the bond. In the event of a dispute of a claim by the surety company, application may  
be made to the Director, Department of Motor Vehicles for good cause shown. After notice and hearing, the director may  
authorize payment of funds from here said surety coverage.

(SEE NEXT)

Bond Number 0688092

This bond may be canceled by the surety at any time by giving written notice by registered mail of its desire and intention so to do. Said cancellation shall be effective thirty (30) days after the receipt of said notice by the State of Nevada, Department of Motor Vehicles, Occupational and Business Licensing Section.

Signed, sealed and dated this 12th day of September, 2016Nevada ATCF LLC

(Printed Name, Principal)

  
(Signature, Principal)Gautam GuptaInternational Fidelity Insurance Company

(Surety)

Telephone Number of Surety: (925) 256 - 87602999 Oak Road, Suite 820

(Mailing Address of Surety Company, Street)

Walnut Creek, CA 94597

(City, State and Zip Code)

By 

(Signature, Attorney-In-Fact for Surety)

Kelly Holtemann, Attorney-In-Fact


(Printed Name, Attorney-In-Fact)

(Surety Seal)

Countersigned on behalf of:

International Fidelity Insurance Company

(Surety)

this 12th day of September, 2016  
(Signature, Agent)Lawrence Joseph Coyne, NV Non-Res. Lic #559589

(Printed Name, Agent)

Woodruff-Sawyer & Company, NV Non-Res. Lic #1838

(Business Name, Agent)

50 California Street, Floor 12, San Francisco, CA 94111

(Business Address, Agent)

**CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT****CIVIL CODE § 1189**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California )

County of Marin )On September 12, 2016 before me, J. DeLuca, Notary Public,

Date

Here Insert Name and Title of the Officer

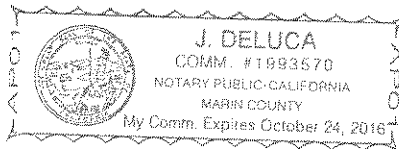
personally appeared Kelly Holtemann

Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature J. DeLuca  
Signature of Notary Public

Place Notary Seal Above

**OPTIONAL**

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

**Description of Attached Document**

Title or Type of Document: \_\_\_\_\_ Document Date: \_\_\_\_\_

Number of Pages: \_\_\_\_\_ Signer(s) Other Than Named Above: \_\_\_\_\_

**Capacity(ies) Claimed by Signer(s)**

Signer's Name: \_\_\_\_\_ Signer's Name: \_\_\_\_\_

☐ Corporate Officer — Title(s): \_\_\_\_\_ ☐ Corporate Officer — Title(s): \_\_\_\_\_☐ Partner — ☐ Limited ☐ General ☐ Partner — ☐ Limited ☐ General☐ Individual ☐ Attorney in Fact ☐ Individual ☐ Attorney in Fact☐ Trustee ☐ Guardian or Conservator ☐ Trustee ☐ Guardian or Conservator☐ Other: \_\_\_\_\_ ☐ Other: \_\_\_\_\_

Signer Is Representing: \_\_\_\_\_ Signer Is Representing: \_\_\_\_\_



Tel (973) 624-7200

**POWER OF ATTORNEY****INTERNATIONAL FIDELITY INSURANCE COMPANY  
ALLEGHENY CASUALTY COMPANY**

ONE NEWARK CENTER, 20TH FLOOR NEWARK, NEW JERSEY 07102-5207

KNOW ALL MEN BY THESE PRESENTS: That INTERNATIONAL FIDELITY INSURANCE COMPANY, a corporation organized and existing under the laws of the State of New Jersey, and ALLEGHENY CASUALTY COMPANY, a corporation organized and existing under the laws of the State of Pennsylvania, having their principal office in the City of Newark, New Jersey, do hereby constitute and appoint

LAWRENCE J. COYNE, KELLY HOLTEMANN, THOMAS E. HUGHES, STANLEY D. LOAR, JOAN DELUCA

Novato, CA.

their true and lawful attorney(s)-in-fact to execute, seal and deliver for and on its behalf as surety, any and all bonds and undertakings, contracts of indemnity and other writings obligatory in the nature thereof, which are or may be allowed, required or permitted by law, statute, rule, regulation, contract or otherwise, and the execution of such instrument(s) in pursuance of these presents, shall be as binding upon the said INTERNATIONAL FIDELITY INSURANCE COMPANY and ALLEGHENY CASUALTY COMPANY, as fully and amply, to all intents and purposes, as if the same had been duly executed and acknowledged by their regularly elected officers at their principal offices.

This Power of Attorney is executed, and may be revoked, pursuant to and by authority of the By-Laws of INTERNATIONAL FIDELITY INSURANCE COMPANY and ALLEGHENY CASUALTY COMPANY and is granted under and by authority of the following resolution adopted by the Board of Directors of INTERNATIONAL FIDELITY INSURANCE COMPANY at a meeting duly held on the 20th day of July, 2010 and by the Board of Directors of ALLEGHENY CASUALTY COMPANY at a meeting duly held on the 15th day of August, 2000:

"RESOLVED, that (1) the President, Vice President, Chief Executive Officer or Secretary of the Corporation shall have the power to appoint, and to revoke the appointments of, Attorneys-in-Fact or agents with power and authority as defined or limited in their respective powers of attorney, and to execute on behalf of the Corporation and affix the Corporation's seal thereto; bonds, undertakings, recognizances, contracts of indemnity and other written obligations in the nature thereof or related thereto; and (2) any such Officers of the Corporation may appoint and revoke the appointments of joint-control custodians, agents for acceptance of process, and Attorneys-in-fact with authority to execute waivers and consents on behalf of the Corporation; and (3) the signature of any such Officer of the Corporation and the Corporation's seal may be affixed by facsimile to any power of attorney or certification given for the execution of any bond, undertaking, recognizance, contract of indemnity or other written obligation in the nature thereof or related thereto, such signature and seals when so used whether heretofore or hereafter, being hereby adopted by the Corporation as the original signature of such officer and the original seal of the Corporation, to be valid and binding upon the Corporation with the same force and effect as though manually affixed."

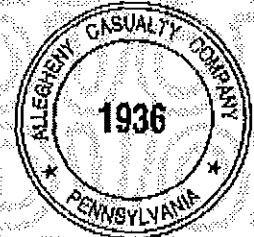
IN WITNESS WHEREOF, INTERNATIONAL FIDELITY INSURANCE COMPANY and ALLEGHENY CASUALTY COMPANY have each executed and attested these presents on this 22nd day of July, 2014.



STATE OF NEW JERSEY  
County of Essex

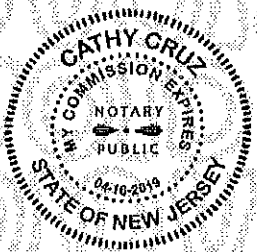
*Robert W. Minster*

ROBERT W. MINSTER  
Chief Executive Officer (International Fidelity Insurance Company) and President (Allegheny Casualty Company)



On this 22nd day of July 2014, before me came the individual who executed the preceding instrument, to me personally known, and, being by me duly sworn, said he is the therein described and authorized officer of INTERNATIONAL FIDELITY INSURANCE COMPANY and ALLEGHENY CASUALTY COMPANY; that the seals affixed to said instrument are the Corporate Seals of said Companies; that the said Corporate Seals and his signature were duly affixed by order of the Boards of Directors of said Companies.

IN TESTIMONY WHEREOF, I have hereunto set my hand affixed my Official Seal, at the City of Newark, New Jersey the day and year first above written.



*Cathy Cruz*

A NOTARY PUBLIC OF NEW JERSEY  
My Commission Expires April 16, 2019

**CERTIFICATION**

I, the undersigned officer of INTERNATIONAL FIDELITY INSURANCE COMPANY and ALLEGHENY CASUALTY COMPANY do hereby certify that I have compared the foregoing copy of the Power of Attorney and affidavit, and the copy of the Sections of the By-Laws of said Companies as set forth in said Power of Attorney, with the originals on file in the home office of said companies, and that the same are correct transcripts thereof, and of the whole of the said originals, and that the said Power of Attorney has not been revoked and is now in full force and effect.

IN TESTIMONY WHEREOF, I have hereunto set my hand this

12th

day of

September, 2016

*Maria H. Branco*

MARIA BRANCO, Assistant Secretary

**Nevada ATCF LLC Autonomous Technology Certification Facility License Application**

**Appendix (to supplement Page 4 of the Application)**

Personnel authorized by Nevada ATCF LLC to certify autonomous technology:

Managers / Authorized Representatives

Anthony Lewandowski

Robert Miller

Matt Williams

Matt Grigsby

Operations

Ryan Espinosa

Wendnara (Shawn) Phok

Ngoc Vu (Vincent) Tran

Nic Munley

Justin Wright

Walter Martin

Gillian Nugent

Jasvinder Bagri

Charles Hirschy

Brian Gagliardi

Jordan Romaidis

Sammy Ghorbanian

Preston Delgado

Denis Rykov

Luis Arciniegas

Jacob Larry



# NEVADA ATCF LLC

<b>Business Entity Information</b>			
Status:	Active	File Date:	09/08/2016
Type:	Domestic Limited-Liability Company	Entity Number:	E0398252016-0
Qualifying State:	NV	List of Officers Due:	09/30/2017
Managed By:	Managing Members	Expiration Date:	
Foreign Name:		On Admin Hold:	No
NV Business ID:	NV20161535218	Business License Exp:	09/30/2017

<b>Additional Information</b>	
	Central Index Key

<b>Registered Agent Information</b>			
Name:	THE CORPORATION TRUST COMPANY OF NEVADA	Address 1:	701 S CARSON ST STE 200
Address 2:		City:	CARSON CITY
State:	NV	Zip Code:	89701
Phone:		Fax:	
Mailing Address 1:		Mailing Address 2:	
Mailing City:		Mailing State:	NV
Mailing Zip Code:			
Agent Type:	Commercial Registered Agent - Corporation		
Jurisdiction:	NEVADA	Status:	Active
<a href="#">View all business entities under this registered agent ()</a>			

<b>Officers</b>		<input type="checkbox"/> Include Inactive Officers	
<b>Managing Member - OTTOMOTTO LLC</b>			
Address 1:	737 HARRISON STREET	Address 2:	
City:	SAN FRANCISCO	State:	CA
Zip Code:	94107	Country:	USA
Status:	Active	Email:	

<b>Actions/Amendments</b>
<a href="#">Click here to view 2 actions/amendments associated with this company ()</a>

Supported Internet Browser versions: Apple iOS 9, Internet Explorer 11, FireFox 45, Google Chrome 49 (available in 2017)

Security error messages: Customers using older browsers may receive error messages if not using TLS 1.1 or TLS 1.2.

Disclaimer

**STATE OF NEVADA**  
**CERTIFICATE OF COMPLIANCE**  
**AUTONOMOUS TECHNOLOGY**

**Vehicle Identification Number:**

**Vehicle Year:**

**Make:**

**Model:**

**Company Issuing Certificate:**

**Nevada DMV Business License Number:**

**Printed Name of Authorized Personnel:**

**Signature of Authorized Personnel:**

**Date:**

- ☐ This vehicle may be operated without the physical presence of a driver.
- ☐ This vehicle may NOT be operated without the physical presence of a driver.

This certificate of compliance ensures the vehicle noted above has been equipped with all of the features required by Chapter 482A of the Nevada Revised Statutes and Nevada Administrative Codes. The issuing authority of this certificate has provided the owner with a manual detailing the vehicle's capabilities and limitations as an Autonomous Vehicle.



Nevada ATCF LLC  
7900 West Sunset Rd, Las Vegas, NV 89113  
[atcf@ot.to](mailto:atcf@ot.to)  
303-667-3445

# **AUTONOMOUS TECHNOLOGY CERTIFICATION**

*Employee Training Program*

## TABLE OF CONTENTS

<u>EMPLOYEE TRAINING PROGRAM</u>	3
<u>Purpose</u>	3
<u>Employee Training Program Checklist</u>	3
<u>Autonomous Technology Certification</u>	4
<u>Introduction / Background</u>	4
<u>General AT Inspection Procedures</u>	5
<u>Requirements for Issuance of a Certificate of Compliance</u>	5
<u>GUIDANCE TO AUTONOMOUS TECHNOLOGY INSPECTION</u>	7
<u>General Notes</u>	7
<u>What to do if the inspected vehicle doesn't pass the AT inspection?</u>	7
<u>DATA CAPTURE AND STORAGE</u>	9
<u>ENGAGE SWITCH</u>	11
<u>VISUAL INDICATOR</u>	12
<u>FAILURE ALERT</u>	13
<u>SAFETY FEATURES INTERFERENCE</u>	15
<u>COMPLIANCE WITH TRAFFIC LAWS</u>	16
<u>DISENGAGEMENT</u>	17
<u>OWNER'S MANUAL</u>	19
<u>FINAL INSPECTION EVALUATION</u>	21
<u>NEVADA STATE CERTIFICATE OF COMPLIANCE</u>	21
<u>DECLARATION OF COMPLETION</u>	22
<u>AUTONOMOUS TECHNOLOGY INSPECTION CHECKLIST</u>	23

<u>DATA CAPTURE AND STORAGE</u>	23
<u>ENGAGE SWITCH</u>	25
<u>VISUAL INDICATOR</u>	26
<u>FAILURE ALERT</u>	27
<u>SAFETY FEATURES INTERFERENCE</u>	28
<u>COMPLIANCE WITH TRAFFIC LAWS</u>	29
<u>DISENGAGEMENT</u>	30
<u>OWNER'S MANUAL</u>	31
<u>FINAL INSPECTION EVALUATION</u>	32
<u>NEVADA STATE CERTIFICATE OF COMPLIANCE</u>	32
<u>CERTIFICATE OF COMPLIANCE</u>	33

# EMPLOYEE TRAINING PROGRAM

## 1) Purpose

**Nevada ATCF LLC** (the "Company") provides the highest quality Autonomous Technology ("AT") certification services for persons seeking a Certificate of Compliance for AT installed on autonomous vehicles in the State of Nevada. The safety of the public on Nevada's roads and highways is the Company's highest priority. Therefore, all Company employees, especially those directly engaged in certifying AT, are expected to uphold the highest standards of safety through strict compliance with the Nevada Department of Motor Vehicles' requirements for the issuance of a Certificate of Compliance under NAC 482A.190 (the "Certificate of Compliance").

This document outlines the procedures that all Company employees engaged in certifying AT in connection with the issuance of a Certificate of Compliance must follow in order to ensure uniform standards and quality of work.

## 2) Employee Training Program Checklist

All Company employees engaged in certifying AT must read and complete this Autonomous Technology Certification Facility Training Program (the "Training Program"). Before any employee is permitted to certify AT, he/she must:

- ☐ Read this Training Program in its entirety
- ☐ Familiarize him/herself with the State of Nevada Autonomous Technology Certificate of Compliance
- ☐ Hold at least one meeting with the Manager of the Autonomous Technology Certifying Facility (the "Manager") to resolve any questions the employee may have about the AT certification procedures and quality standards

- ❑ Schedule a training inspection with the Manager
- ❑ Study the Guidance to Autonomous Technology Inspection
- ❑ Undertake a training inspection of an autonomous vehicle (to be selected by the Manager) during which the Manager directly supervises and guides the employee as he/she inspects and certifies the subject vehicle. The training inspection is to be performed using the Autonomous Technology Inspection Checklist; the employee will **NOT** have access to the Guidance to Autonomous Technology Inspection during the training inspection
- ❑ Complete, sign, and return to the Manager the Training Program Declaration of Completion found at the end of this manual. All employees are required to complete and submit this document to the Manager before being permitted to inspect AT.
- ❑ In addition to the items above, an employee who is certifying AT must also hold in-person semi-annual meetings with the Manager and other employees engaged in AT certification in order to share common experiences and lessons learned in order to continually improve the certification procedures.

### **3) Autonomous Technology Certification**

#### *Introduction / Background*

Before an autonomous vehicle may be offered for sale by a licensed vehicle dealer in Nevada, a Certificate of Compliance must be issued for the AT installed on the autonomous vehicle. An Autonomous Technology Certification Facility ("ATCF") may issue a Certificate of Compliance to a manufacturer of an autonomous vehicle or to any other person who wishes to obtain such certificate for a new or used vehicle with AT. These requirements ensure that autonomous vehicles operating on Nevada roadways adhere to the requirements stipulated by the State of Nevada.

#### *General AT Inspection Procedures*

To complete an AT inspection, Company employees must have full and unrestricted access to the vehicle containing the AT for a period of time sufficient for the employee to thoroughly inspect the vehicle, operate the autonomous vehicle, and verify that it is fully compliant with the requirements set forth in the Autonomous Technology Inspection Checklist. A representative of the client of the Company's ATCF (the "Client") may, but need not to, be present during the AT inspection.

While operating an autonomous vehicle during the AT inspection, a Company employee must always remain in the driver's seat and continuously monitor performance of the inspected vehicle. The employee must be alert to any issues the inspected autonomous vehicle may encounter and must be prepared to take control of the inspected autonomous vehicle at any time.

#### *Requirements for Issuance of a Certificate of Compliance*

The Autonomous Technology Inspection Checklist attached to this Training Program details all the requirements that an AT must meet in order for a Certificate of Compliance to be issued. Employees conducting an AT inspection are required to use the Autonomous Technology Inspection Checklist during every AT inspection.

The employee must submit a copy of the completed Autonomous Technology Inspection Checklist, along with detailed written notes to the Manager within three business days of completing the AT inspection. In the case of a failed AT inspection, another copy of the completed Autonomous Technology Inspection Checklist must be submitted to the Client.

The Certificate of Compliance will be issued if and only if 1) the employee performing the AT inspection confirms that all requirements outlined in the Autonomous Technology Inspection Checklist are met, 2) the employee submits the completed Autonomous

Technology Inspection Checklist to the Manager and 3) the Manager confirms that a Certificate of Compliance should be issued.

Partial compliance is not acceptable. In the event that any one or more of the requirements are not met, the inspecting employee shall not issue the Certificate of Compliance; rather, the employee will:

- a) Note the missing requirement(s);
- b) If possible, note suggested remedies that may bring the AT into compliance;
- c) Discuss the failed AT inspection and reasons for it with the Manager;
- d) Submit a copy of the completed Autonomous Technology Inspection Checklist with detailed written notes to the Manager;
- e) Notify the Client in writing about the unfulfilled requirements and (if applicable) potential solutions; and
- f) Invite the Client to reapply for certification once the Client believes the AT has been brought into compliance.

**ONLY 100% COMPLIANCE RESULTS IN ISSUANCE OF A CERTIFICATE OF COMPLIANCE**

# GUIDANCE TO AUTONOMOUS TECHNOLOGY INSPECTION

*(Guidance will NOT be provided during training inspection)*

## General Notes

- *Before performing an AT inspection, discuss with the Client the design, function and technological features of the subject vehicle's AT and inquire with the Client about any technological details that may need your attention.*
- *Ensure you have uninhibited access to the vehicle for a sufficient period of time.*
- *Inspect the general condition of the vehicle before starting the AT inspection. This may include the following:*
  - ◆ *Check for foreign objects / debris*
  - ◆ *Verify tire pressure*
  - ◆ *Open engine compartment and check fluid levels*
- *Perform all checks listed in the Autonomous Technology Inspection Checklist.*
- *While inspecting the autonomous vehicle, complete the Autonomous Technology Inspection Checklist.*
- *After the AT inspection is complete, check the Autonomous Technology Inspection Checklist for completeness and full compliance.*
- *If appropriate, and following a confirmation from the Manager, issue a Certificate of Compliance.*

## What to do if the inspected vehicle doesn't pass the AT inspection?

- *Submit a copy of the completed Autonomous Technology Inspection Checklist, along with detailed written notes regarding the unfulfilled requirements to the*



*Client. Provide the Client with an overview of why the vehicle was not certified, and what steps would need to be taken to bring the subject vehicle AT into compliance.*

- Notify and consult the Manager. Submit a copy of the completed Autonomous Technology Inspection Checklist, along with detailed written notes to the Manager.*
- Invite the Client to reapply for certification once the client believes the AT has been brought into compliance.*

## 1) DATA CAPTURE AND STORAGE

- ☐ The inspected AT has a separate mechanism to capture and store AT sensor data for at least 30 seconds before any collision occurs between the autonomous vehicle and another vehicle, object or natural person while the vehicle is operating in autonomous mode.
  - ☐ This mechanism is addition to, and separate from, any other data capture and storage mechanism required by law.
  - ☐ The AT sensor data is captured and stored in a read-only format by the mechanism so that the data is retained until extracted from the mechanism by an external device capable of downloading and storing the data.
  - ☐ The AT is configured to preserve the data for 3 years after the date of any collision.
- 
- ***Operate the Inspected autonomous vehicle to capture data.***
  - ***Verify that all data are captured and recorded on the autonomous vehicle's hard drive.***
  - ***Verify that data are available to be downloaded using an external device.***
  - ***Verify that downloaded data is in a read-only format.***
  - ***Verify that the technology is configured to preserve data for 3 years (or longer).***
  - ***Copy existing log files to a redundant server system.***

The inspected AT complies with all **DATA CAPTURE AND STORAGE** requirements.

☐ Yes

☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---

## 2) ENGAGE SWITCH

- ☐ The inspected AT has a switch to engage and disengage the autonomous operation of the vehicle.
- ☐ The switch is easily accessible to the operator of the autonomous vehicle and is not likely to distract the operator from focusing on the road while engaging or disengaging the autonomous vehicle.

- ***Check that engage switch is installed.***
- ***While operating the inspected autonomous vehicle, verify that the engage switch is working properly and the autonomous vehicle engages into autonomous mode every time.***
- ***Verify that the placement of the engage switch is appropriate. You should be able to use the switch without losing sight of the road.***

The inspected AT complies with all **ENGAGE SWITCH** requirements.

- ☐ Yes
- ☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---

### 3) VISUAL INDICATOR

- ☐ The inspected AT has a visual indicator inside the autonomous vehicle which indicates when the autonomous vehicle is engaged in autonomous mode.

→ *Check that visual indicator is installed.*

→ *While operating the inspected autonomous vehicle, verify that the visual indicator is working properly by engaging and disengaging from autonomous mode while monitoring the visual indicator.*

The inspected AT complies with all **VISUAL INDICATOR** requirements.

- ☐ Yes  
☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---

#### **4) FAILURE ALERT**

- ☐ The inspected AT has a system to safely alert the operator of the autonomous vehicle if a technology failure is detected while the autonomous vehicle is engaged in autonomous mode.
- ☐ When such an alert is given, either (at least one of the points below MUST be checked):
  - ☐ (1) The AT requires the operator to take control of the autonomous vehicle; or
  - ☐ (2) If the operator is unable to take control of or is not physically present in the autonomous vehicle, the inspected autonomous vehicle is equipped with technology to cause the autonomous vehicle to safely move out of traffic and come to a stop.

**→ While operating the inspected autonomous vehicle, verify that AT failure checks (hardware and software) are functioning properly:**

- ◆ ***Enter autonomous mode and simulate a system failure by separately disabling each of the following:***
  - ***Software: Autonomous driving software***
  - ***Hardware: Radar, LiDar, Cameras, GPS, any other applicable perception hardware***
  - ***Power supply***
- ◆ ***Verify that the AT alerts operator every time a system failure is simulated.***
- ◆ ***Verify that immediately following the simulated system failure one of the following happens:***
  - a) The AT requires the operator to take control or***
  - b) The AT safely moves out of traffic and comes to a stop***

The inspected AT complies with all **FAILURE ALERT** requirements.

☐ Yes

☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---

## 5) SAFETY FEATURES INTERFERENCE

- ☐ The inspected AT does not adversely affect any other safety features of the autonomous vehicle which are subject to federal regulation.

→ *While operating the inspected autonomous vehicle, verify that the inspected AT does not interfere with any other safety features including:*

- ◆ *Brakes*
- ◆ *Steering*
- ◆ *Throttle*
- ◆ *Shifter*
- ◆ *Lights*

The inspected AT complies with all **SAFETY FEATURES INTERFERENCE** requirements.

- ☐ Yes
- ☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---



## 6) COMPLIANCE WITH TRAFFIC LAWS

- ☐ The inspected AT is capable of being operated in compliance with the applicable traffic laws of Nevada.
- ☐ The inspected AT indicates whether it may be operated with or without the physical presence of an operator.

→ *While operating the inspected autonomous vehicle, verify that the vehicle operates in compliance with all applicable traffic laws.*

- ◆ *Confirm that the AT is able to remain within lane markings without any software disengagements.*
- ◆ *Verify that the AT is able to autonomously navigate road environments corresponding to its intended use.*

→ *Verify that the inspected autonomous vehicle clearly indicates whether it it may be operated with or without the physical presence of an operator.*

The inspected AT complies with all **APPLICABLE TRAFFIC LAW** requirements.

- ☐ Yes
- ☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---

## 7) DISENGAGEMENT

☐ Is it necessary for the operator of the autonomous vehicle to be physically present in the autonomous vehicle when autonomous mode is engaged (select one)?

☐ No - proceed to number 8 below.

☐ Yes.

☐ The inspected AT allows the operator to take control of the autonomous vehicle in multiple manners, including, without limitation, the following (check all that applies):

☐ the use of the brake

☐ the accelerator pedal

☐ the steering wheel

☐ other (explain): \_\_\_\_\_

☐ The inspected AT alerts the operator that the autonomous mode has been disengaged.

→ ***Verify the presence of a disengage button. (This may be the same device as the engage button.)***

→ ***Check the owner's manual for presence of any other disengagement mechanism(s) available in the inspected autonomous vehicle.***

→ ***While operating the inspected vehicle, verify proper functioning of each disengagement mechanism by disengaging autonomous mode through each of the mechanisms separately.***

◆ ***Enter autonomous mode and verify that each disengagement mechanism appropriately disengages the AT every time.***

◆ ***Verify that alert is provided to the operator every time autonomous mode is disengaged.***

The inspected AT complies with all **DISENGAGEMENT** requirements.

☐ Yes

☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---

## **8) OWNER'S MANUAL**

- ☐ Owner's manual for the inspected autonomous vehicle has been prepared.
- ☐ The owner's manual describes any limitations and capabilities of the autonomous vehicle.
- ☐ The owner's manual describes whether the operator of the autonomous vehicle must be physically present in the autonomous vehicle while the vehicle is engaged in autonomous mode.
- ☐ A copy of owner's manual was provided to the purchaser of an autonomous vehicle.

- *Locate owner's manual in the inspected autonomous vehicle.***
- *Verify the AT description in the owner's manual clearly and correctly describes the AT available in the inspected autonomous vehicle.***
- *Verify that limitations of the AT are clearly identified and highlighted in the owner's manual.***
- *Submit a copy of the owner's manual to the purchaser of the inspected autonomous vehicle (typically the ATCF Client).***

The inspected AT complies with all requirements pertaining to **OWNER'S MANUAL**.

☐ Yes

☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---

## **9) FINAL INSPECTION EVALUATION**

Have all requirements for certification been met (check one)?:

- ☐ Yes - proceed to number 10 below.
- ☐ No - if possible, advise client on how to resolve outstanding issues.

### **ONLY 100% COMPLIANCE RESULTS IN ISSUANCE OF CERTIFICATE OF COMPLIANCE.**

## **10) NEVADA STATE CERTIFICATE OF COMPLIANCE**

If all of the requirements were met by the inspected AT, complete the State of Nevada Certificate of Compliance for Autonomous Technology and issue the certificate to the Client.

The Certificate of Compliance will be issued if and only if 1) the employee performing the AT inspection confirms that all requirements outlined in the Autonomous Technology Inspection Checklist are met, 2) the employee submits the completed Autonomous Technology Inspection Checklist to the Manager and 3) the Manager confirms that a Certificate of Compliance should be issued.

## DECLARATION OF COMPLETION

I, \_\_\_\_\_, hereby declare that I have completed the Autonomous Technology Certification Facility Training Program. I am able to perform autonomous technology inspection to the highest standards as required by the Company and the laws of the State of Nevada. I agree to issue a State of Nevada Certificate of Compliance for Autonomous Technology only if all of the requirements listed in the Autonomous Technology Inspection Checklist are met.

\_\_\_\_\_  
Signature (employee):

Name:

Date:

\_\_\_\_\_  
Signature (Manager):

Name:

Date:

# **AUTONOMOUS TECHNOLOGY INSPECTION CHECKLIST**

**State of Nevada Certificate of Compliance certifies that AT contained in the inspected autonomous vehicle complies with ALL of the following requirements.**

## **1) DATA CAPTURE AND STORAGE**

- ☐ The inspected AT has a separate mechanism to capture and store AT sensor data for at least 30 seconds before any collision occurs between the autonomous vehicle and another vehicle, object or natural person while the vehicle is operating in autonomous mode.
  - ☐ This mechanism is addition to, and separate from, any other data capture and storage mechanism required by law.
- ☐ The AT sensor data is captured and stored in a read-only format by the mechanism so that the data is retained until extracted from the mechanism by an external device capable of downloading and storing the data.
- ☐ The AT is configured to preserve the data for 3 years after the date of any collision.



The inspected AT complies with all **DATA CAPTURE AND STORAGE** requirements.

☐ Yes

☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---

## 2) ENGAGE SWITCH

- ☐ The inspected AT has a switch to engage and disengage the autonomous operation of the vehicle.
- ☐ The switch is easily accessible to the operator of the autonomous vehicle and is not likely to distract the operator from focusing on the road while engaging or disengaging the autonomous vehicle.

The inspected AT complies with all **ENGAGE SWITCH** requirements.

- ☐ Yes
- ☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---

### 3) VISUAL INDICATOR

- ☐ The inspected AT has a visual indicator inside the autonomous vehicle which indicates when the autonomous vehicle is engaged in autonomous mode.

The inspected AT complies with all **VISUAL INDICATOR** requirements.

☐ Yes

☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---

#### 4) FAILURE ALERT

- ☐ The inspected AT has a system to safely alert the operator of the autonomous vehicle if a technology failure is detected while the autonomous vehicle is engaged in autonomous mode.
- ☐ When such an alert is given, either (at least one of the points below MUST be checked):
  - ☐ (1) The AT requires the operator to take control of the autonomous vehicle; or
  - ☐ (2) If the operator is unable to take control of or is not physically present in the autonomous vehicle, the inspected autonomous vehicle is equipped with technology to cause the autonomous vehicle to safely move out of traffic and come to a stop.

The inspected AT complies with all **FAILURE ALERT** requirements.

- ☐ Yes
- ☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---

## 5) SAFETY FEATURES INTERFERENCE

- ☐ The inspected AT does not adversely affect any other safety features of the autonomous vehicle which are subject to federal regulation.

The inspected AT complies with all **SAFETY FEATURES INTERFERENCE** requirements.

- ☐ Yes  
☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---

## 6) COMPLIANCE WITH TRAFFIC LAWS

- ☐ The inspected AT is capable of being operated in compliance with the applicable traffic laws of Nevada.
- ☐ The inspected AT indicates whether it may be operated with or without the physical presence of an operator.

The inspected AT complies with all **APPLICABLE TRAFFIC LAW** requirements.

- ☐ Yes
- ☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---

## 7) DISENGAGEMENT

- ☐ Is it necessary for the operator of the autonomous vehicle to be physically present in the autonomous vehicle when autonomous mode is engaged (select one)?
- ☐ No - proceed to number 8 below
  - ☐ Yes
    - ☐ The inspected AT allows the operator to take control of the autonomous vehicle in multiple manners, including, without limitation, the following (check all that applies):
      - ☐ the use of the brake
      - ☐ the accelerator pedal
      - ☐ the steering wheel
      - ☐ other (explain): \_\_\_\_\_
    - ☐ The inspected AT alerts the operator that the autonomous mode has been disengaged.

The inspected AT complies with all **DISENGAGEMENT** requirements.

- ☐ Yes
- ☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---

## 8) OWNER'S MANUAL

- ☐ Owner's manual for the inspected autonomous vehicle has been prepared.
- ☐ The owner's manual describes any limitations and capabilities of the autonomous vehicle.
- ☐ The owner's manual describes whether the operator of the autonomous vehicle must be physically present in the autonomous vehicle while the vehicle is engaged in autonomous mode.
- ☐ A copy of owner's manual was provided to the purchaser of an autonomous vehicle.

The inspected AT complies with all requirements pertaining to **OWNER'S MANUAL**.

- ☐ Yes
- ☐ No - explain below

Reason for Noncompliance:

---

Detailed Explanation:

---

---

---

---



## **9) FINAL INSPECTION EVALUATION**

Have all the requirements for certification been met (check one)?:

- ☐ Yes - proceed to number 10.
- ☐ No - if possible, advise client on how to resolve outstanding issues.

**ONLY 100% COMPLIANCE RESULTS IN ISSUANCE OF CERTIFICATE OF COMPLIANCE.**

## **10) NEVADA STATE CERTIFICATE OF COMPLIANCE**

If all of the requirements were met by the inspected autonomous vehicle, complete the State of Nevada Certificate of Compliance for Autonomous Technology and issue the certificate to the client.

The Certificate of Compliance will be issued if and only if 1) the employee performing the AT inspection confirms that all requirements outlined in the Autonomous Technology Inspection Checklist are met, 2) the employee submits the completed Autonomous Technology Inspection Checklist to the Manager and 3) the Manager confirms that a Certificate of Compliance should be issued.

## CERTIFICATE OF COMPLIANCE

STATE OF NEVADA  
**CERTIFICATE OF COMPLIANCE**  
**AUTONOMOUS TECHNOLOGY**

**Vehicle Identification Number:**

**Vehicle Year:**

**Make:**

**Model:**

**Company Issuing Certificate:**

**Nevada DMV Business License Number:**

**Printed Name of Authorized Personnel:**

**Signature of Authorized Personnel:**

**Date:**

- ☐ This vehicle may be operated without the physical presence of a driver.
- ☐ This vehicle may NOT be operated without the physical presence of a driver.

This certificate of compliance ensures the vehicle noted above has been equipped with all of the features required by Chapter 482A of the Nevada Revised Statutes and Nevada Administrative Codes. The issuing authority of this certificate has provided the owner with a manual detailing the vehicle's capabilities and limitations as an Autonomous Vehicle.

Nevada ATCF LLC  
7900 West Sunset Rd, Las Vegas, NV 89113  
[atcf@ot.to](mailto:atcf@ot.to)  
303-667-3445

# **AUTONOMOUS TECHNOLOGY KNOWLEDGE AND EXPERTISE**

*Certification of Autonomous Vehicles*

## Table of Contents

<u>Purpose</u>	2
<u>Company Background</u>	2
<u>Organizational Structure</u>	2
<u>Otto - Industry Leader</u>	3
<u>Mission</u>	3
<u>Otto's Product</u>	3
<u>Co-Founders' Bios</u>	4
<u>Team Leads' Bios</u>	5
<u>Otto &amp; State of Nevada Partnership</u>	7
<u>Commitment to Safety Regulations</u>	7
<u>Expertise - Nevada State Regulations</u>	7
<u>Drivers' Expertise</u>	8
<u>Technical Expertise and Institutional Knowledge</u>	8
<u>Compliance with Federal Regulations</u>	11

## I. Purpose

This document outlines **Nevada ATCF LLC** knowledge and expertise in certifying the safety of autonomous vehicles ("AVs") in accordance with applicable State of Nevada regulations. It highlights the Company's competence and capabilities with respect to operating an Autonomous Technology Certification Facility ("ATCF") and supports the Company's application for an ATCF license submitted to the State of Nevada Department of Motor Vehicles.

Throughout this document, "Otto" refers to **Ottomotto LLC**, while "Company" refers to **Nevada ATCF LLC**, the applicant for the ATCF license.

## II. Company Background

### *Organizational Structure*

Otto, the 100% owner of the Company, was founded in January 2016 and is headquartered in San Francisco, California. Otto is led by the former Technical Lead of Google's Autonomous Car Division, Anthony Levandowski, and the former Product Lead of Google Maps, Lior Ron. With close to 100 employees, Otto brings together a team of the sharpest minds in the AV industry with many years of practical expertise in self-driving technology and robotics.

In August 2016, Otto was acquired by Uber Technologies, Inc ("Uber"). Prior to that acquisition, Uber already possessed a deep understanding and technical competence in AV technology, spearheaded by Uber's Advanced Technology Center in Pittsburgh, Pennsylvania (see <https://www.uberatc.com/>). Although the remainder of this document focuses on the specific knowledge, expertise and experience of Otto's team, it should be noted that the recent acquisition and related exchange of ideas and expertise

between Otto and Uber has created the leading force in AV technology research and development.

#### *Otto - Industry Leader*

Otto is at the leading edge of AV technology development. Otto's team brings together engineers who previously worked at Google, Apple, Tesla, and a number of other prominent companies working at the intersection of hardware, software, automotive, and machine learning technologies. Otto's employees have substantial technological and engineering expertise and the team is driven to accelerate innovation in the transportation industry.

#### *Mission*

Otto is committed to improving and reinventing transportation. At the heart of the company's vision is the belief that self-driving technology is the key for creating a sustainable, efficient, productive—and above all, safer—transportation future.

#### *Otto's Product*

Otto's goal is to produce advanced safety systems that utilize autonomous driving technologies. Otto's product is a suite of technology hardware and software, including cameras, radar, LiDAR, and automated steering and braking, that can be installed on today's fleet of commercial trucks to retrofit regular tractors and turn them into advanced, safe, AVs. These technology kits are designed to enable truck drivers to drive more safely and efficiently; they are added to each vehicle's standard safety mechanisms and do not interfere with safety features installed by original equipment manufacturers.

Otto's goal is to enhance the capabilities of trucks, collect safety data to demonstrate the benefits of self-driving technology, and facilitate propagation of the technology and its safety benefits to the wider transportation market.

*Co-Founders' Biographies*

**Anthony Levandowski, Co-Founder**

- Multi-year track record of working with Nevada regulators to help develop safe and forward-looking autonomous vehicle regulations in the State of Nevada
- Technical Lead for Google's Self-Driving Car / Software Engineer (2007 - 2016)
- Founder of 510 Systems (2001 - 2007)
  - 510 Systems was acquired by Google and became the core of Google's self-driving project
- Led the Blue Team (University of California, Berkeley engineers) in autonomous vehicle competitions organized by the Pentagon's DARPA in 2004 and 2005
  - The autonomous motorcycle developed by this team was the the world's first autonomous motorcycle<sup>1</sup> and is currently in the Smithsonian

**Lior Ron, Co-Founder**

- Special Advisor to Google (2015)
- Product Strategy Lead at Motorola post Google Acquisition (2012 - 2015)
  - Led and oversaw portfolio of products including Moto X, Moto Maker and Moto 360
- Product Lead for Google Maps (2007 - 2012)
  - Led efforts to scale Google Maps from 10 million users to 1 billion in 5 years
  - Launched and scaled: Google Maps Mobile, My Maps, Google Map Maker, StreetView, Google Moon, Mars, Sky

**Claire Delaunay, Co-Founder**

- Robotics Program Lead at Google (2014 - 2016)

---

<sup>1</sup> GizMag: Autonomous Motorcycle to contest DARPA Grand Challenge

- Led advanced robotics projects at Google X under the umbrella of Google Robotics
- Head of Special Hardware for Project Helpouts at Google (2013 - 2014)
  - Led the hardware team and the camera project
  - Created the first reference design for Hangouts Ready Camera
  - Filed 3 patents
- Founder and CEO at Botiful (2013 - 2014)
  - Developed a “Skype-ready” telepresence robot
  - Led product strategy and engineering execution
- Owner and CEO at Robotics Valley (2010 - 2014)
  - Specialized services for robotics companies

***Don Burnette, Co-Founder***

- Software Engineer at Google (2010 - 2016)
  - Development of self-driving car software

***Team Leads' Biographies***

***David Weikersdorfer, Perception Lead***

- Robotics / Software Engineer at Google (2014 - 2016)
  - Computer vision, robot prototyping, artificial intelligence, software development
- Research Fellow at fortiss GmbH (2014)
  - Research in event-based dynamic vision sensors and multisensor fusion
- Research Associate at TUM (2009 - 2013)
  - Dynamic visions sensors, event-based vision, RGB-D image segmentation with Depth-Adaptive Superpixel, RGB-D video analysis with depth-adaptive supervoxels, simultaneous localization and mapping (SLAM) & more

***Jur Van den Berg, Senior Researcher / Developer***



- Senior Researcher / Developer at Apple (2015 - 2016)
  - Special Projects Group
- Researcher / Developer at Google (2014 - 2015)
  - Self-driving car team
- Assistant Professor at University of Utah (2011 - 2013)
  - Director of the Algorithmic Robotics Lab

***Soren Juelsgaard, Director of Hardware Engineering***

- Director of Automation at Nautilus Group, Inc (2012 - 2016)
- Hardware Manager at Google (2011 - 2012)
  - Self-driving car team
- Director of Engineering at 510 Systems (2009 - 2011)
- General Manager at Nisse Tech LLC (2007 - 2009)

***Robert Miller, Operations Manager***

- Program Manager at Google (2011 - 2016)
  - Self-driving car team
- Fleet Manager at 510 Systems (2009 - 2011)
- Hardware Technician at Google (2007 - 2008)

***Matt Grigsby, Senior Program Manager***

- Senior Operations Engineer at HERE / Nokia (2014 - 2016)
- Operations Engineer at Nokia (2012 - 2014)
- Operations Manager at earthmine inc. (2009 - 2012)
- Operations Lead at Google (2007 - 2009)
  - Google Streetview operations

### III. Otto & State of Nevada Partnership

The Otto team's intellectual capital and institutional knowledge, combined with years of experience in autonomous driving technology and robotics, provide an excellent foundation for the Company to partner with the State of Nevada to establish the first ATCF in the State. While developing, building, implementing and deploying proprietary self-driving technologies, Otto has amassed substantial knowledge and expertise in the industry. Otto's CEO Anthony Levandowski and other members of the Otto team have a well-established track record of cooperating and working with authorities in Nevada to establish the State as a leader in AV regulations that promote safety and foster innovation. As such, the Company is well positioned to safely certify autonomous vehicles to be operated on the State's roads.

### IV. Commitment to Safety Regulations

Otto and the Company are committed to working with state and federal regulators to help establish and follow safety and AV regulations. Otto has already engaged with a number of U.S. states to discuss the future of AV deployment and to advance highway safety. A number of the states noted that they view Nevada as a leading model for their own upcoming AV regulations.

Otto has thus far safely operated its trucks in a number of U.S. states without any incident.

### V. Expertise - Nevada State Regulations

All managers and employees engaged in the certification of Autonomous Technology ("AT") in Nevada will complete a thorough training focused on reinforcing the requisite technical expertise to ensure that the licensed AT complies with the requirements set

forth in Nevada law. The Company's ATCF managers will be leading experts in the field of AT certification in the State of Nevada.

## VI. Drivers' Expertise

Otto's employees and drivers, including the Nevada certification team that will staff the ATCF, are highly experienced and have significant knowledge of their respective fields. Many of Otto's drivers have experience with AV technology that pre-dates their work at Otto, including as AV safety drivers for other companies. All Otto drivers are professionally licensed and hold commercial driver's licenses to go along with years of extensive driving experience. In the aggregate, Otto's drivers have accumulated more than 10,000 miles of AV operation and a combined total of 25+ years of specialized experience piloting AVs at Otto as well as other respected companies in the self-driving industry.

## VII. Technical Expertise and Institutional Knowledge

Otto's team of experienced developers, engineers, mechanics, and designers build Otto's product and research, develop, install and test Otto's AT. Otto's proprietary AT is rigorously tested and re-tested in-house to ensure Otto's AVs are always in compliance with all applicable traffic laws and drive in a manner that prioritizes safety under all circumstances. In the course of Otto's daily business operations, Otto team members regularly engage in the following activities, all of which are relevant to certifying AT in the State of Nevada:

- Developing/verifying the functionality of driving algorithm software
- Capturing/storing/recalling sensor data
- Developing/verifying the functionality of engage/disengage switches
- Transitioning between autonomous and non-autonomous modes

- Developing/verifying the functionality of visual indicators of autonomous operation
- Developing/verifying the functionality of failure alerts
- Verifying the AV's compliance with applicable traffic laws

Selected advanced self-driving technologies developed in-house and/or currently deployed in Otto's autonomous vehicles include:

- **Driving Algorithm Software** - The heart of Otto's AV system built by Otto's leading software engineers. The system is organized in two subsystems running on different computing architectures:
  - The *low level computer* executes time-critical operations such as braking, steering or applying gas. This platform can be duplicated to run on multiple redundant systems.
  - The *perception and planning* system (high level computer) runs at lower frequency and instructs the low level system. This computing unit collects information about the sensors (see "input systems" below) and aggregates them to build an accurate representation of the environment. This representation is then used to compute a safe sequence of actions, taking into account the destination and the dynamic obstacles surrounding the vehicle.

If any failure is detected at this level, the low level system will take over and start emergency procedures. Otherwise the high level computer instructs regularly the low level system of the course of actions.

- **Input Systems:**

- **Cameras** - Industrial high resolution progressive Sony CMOS sensors or similar cameras. Standard features include 40 fps at full resolution, auto gain, auto exposure and 12-bit depth.
- **Computers** - The latest model of Intel i7 multi-core system for seamless integration into any AV.
- **Radar** - Long-range (174m) coverage provides accurate range and speed data with powerful object discrimination that can identify up to 64 targets in the AV's path. Wide field of view (+/-45 degrees) at midrange with long-range coverage to provide two measurement modes simultaneously.
- **LiDAR** - In-house custom built 64-laser (Class 1) emitting 6.4 million beams a second at 10Hz.
- **Wheel Encoders** - High resolution optical encoders, the backbone of feedback devices found in factory automation and industrial applications. Include LED and phased array wide-gap monolithic encoder technology.
- **Applanix** - Using Differential Global Navigation Satellite System (DGNSS) utilizing either differential corrections for any GNSS (GPS, GLONASS, Galileo) to achieve meter-level accuracy, or Real Time Kinematic (RTK) information to achieve decimeter or centimeter accuracy.
- **Inertia Measurement Unit (IMU)** - Consisting of three high accuracy MEMS-based gyros, three high stability accelerometers and three high stability inclinometers.
- **Mapping** - GPS mapping for precise localization of the AV in all conditions and under all circumstances. Otto teams source, aggregate, analyze and utilize mapping data gathered by Otto's AVs. Proprietary mapping data is then customized to program exact lane position for Otto's AVs while driving.

- **Automated Steering and Braking Technology** - Otto's technology is integrated directly into the Drive By Wire (DBW) system enabling precise control of all manual driver input components of the AV.
- **Engage Switch** - Integrated into the AV's dashboard, designed with safety in mind to avoid driver distraction. Ensures that engagement only takes place when the driver is fully alert.
- **Visual indicators** - Easy-to-use modern display panels.
- **Alerts** - Designed to warn drivers well before a road situation becomes critical. Otto's systems operate with multiple levels of redundancies.

## VIII. Compliance with Federal Regulations

Otto is registered with the US Department of Transportation as well as the Federal Motor Carrier Safety Administration. As a registered carrier, Otto complies with all federal regulations applicable to the trucking industry.